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A NEW SPECIES OF *AMBLYCERUS* (COLEOPTERA: BRUCHIDAE) FROM CENTRAL AND SOUTH AMERICA, WITH NOTES ON ITS BIOLOGY

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Abstract.—***Amblycerus whiteheadi*** is described, and notes on the behavior and ecology recorded by L. J. Bottimer are included. The host plant, *Apeiba membranacea,* belongs to the family Tiliaceae

Key Words: Tiliaceae, life history, monkey comb.

The genus *Amblycerus* is found only in the Western Hemisphere except for three species that have been introduced into Pacific islands. About 100 species have been described but a final total of 250 species is projected (Kingsolver 1990). External distinguishing characters are not plentiful but the internal sac of the male genitalia is equipped with intricate hooks, spines, spicules, and serrate sclerites, and their arrangement is generally the basis for species discrimination. Delineation of species groups has not been made but graduate students are investigating Mexican and Brazilian species of this genus.

Amblycerus is noted for host associations not adhering to the notion that most bruchids are affiliated with leguminous plants. No less than 12 plant families, including legumes (broad sense), have yielded one or more species of *Amblycerus.* The species described herein infests the fleshy fruits of *Apeiba membranacea* Spruce ex Benth. (Tiliaceae). *Apeiba aspera* Aubl. and *Apeiba tibourbou* Aubl. are synonyms.

The only previously recorded species of *Amblycerus* associated with Tiliaceae is *Amblycerus simulator* (Jacq.-Du Val) known from the West Indies and Costa Rica in seed capsules of *Luehea speciosa* Willd. (Kingsolver 1970).

Amblycerus whiteheadi, NEW SPECIES

Amblycerus sp. #7: Johnson, 1979: 122.

Integument of body and appendages dark red; antenna and eyes black; scattered black elytral spots. Dorsal vestiture largely brown with areas of white as follows: Head white; pronotum usually with two small, white spots near anterior angles, a row of four small, white spots across middle of disk, and scattered patches near basal lobe. Scutellum white; elytra with irregular, white spots along basal margin, behind scutellum, along sutural and lateral interstices, in strial sulci, in a row of small spots along lateral margin, and in scattered spots on elytral disk; pygidium with large, ovate, velvety brown spot bordered with white; venter of body mottled brown and white.

Vertex and frons uniformly micropunctate; frontal carina evanescent, sometimes absent; mesal margins of eyes with umbilicate punctures separated from frons by fine carina; eyes coarsely faceted; width across eyes compared to narrowest width of frons

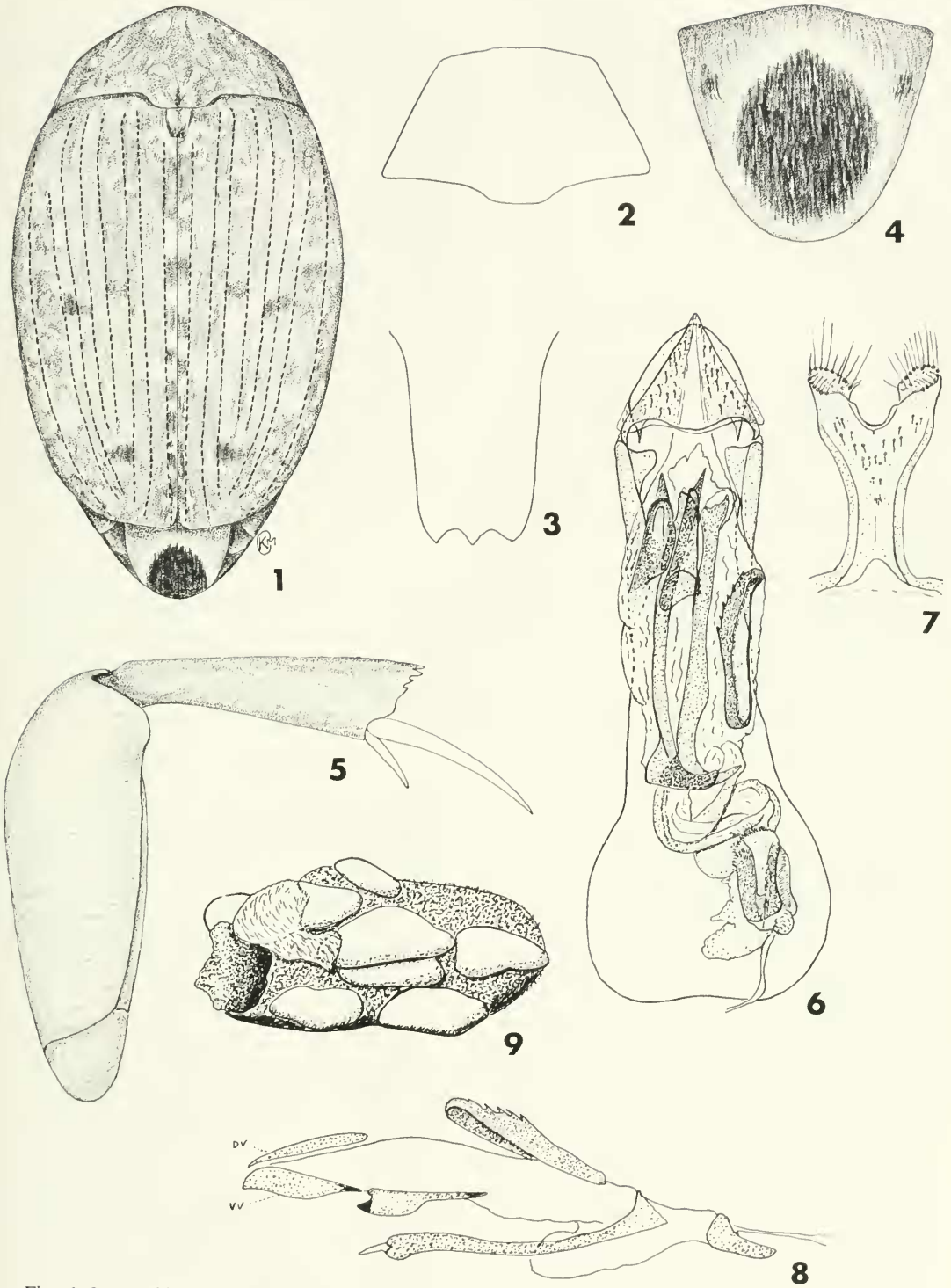
4.5:1 (ocular index); ocular sinus one-sixth length of eye; antenna serrate from fourth segment except terminal segment elliptical, reaching to middle of metepisternum, not sexually dimorphic, Pronotum trapezoidal, lateral margins gently arcuate, apex truncate; disk moderately convex, basal lobe briefly sulcate; surface densely punctulate, lateral one-third of disk either side also coarsely punctate; lateral margin bluntly ridged, delimited by fine dorsal and ventral sulci, dorsal sulcus abruptly angulate behind eye and directed into cervical sulcus; cervical boss usually with three fine setae; basal margin finely sulcate; prosternum flat, margins sulcate, apex expanded and fitting into sulcate mesosternum. Scutellum (Fig. 3) slightly longer than wide, with trilobed apex. Elytra 1.4× as long as wide, evenly convex except slightly depressed around scutellum, sutural interstices sometimes elevated. Metepisternal sulcus angulate, anterior arm arcuate; metacoxal face sparsely punctate in distal two-thirds, glabrous in proximal one-third, fossula with narrow fringe of setae on rim of concavity surrounding trochanteral fossa; metafemur subparallel in basal three-fourths, sinuate toward apex, ventral margins carinate, ventral face slightly sulcate; metatibia lacking carinae; lateral terminal spur two-thirds as long as basitarsus. Abdomen unmodified; male pygidium vertical, female pygidium oblique; male eighth tergite acute, often protruding between pygidium and terminal sternum. Male genitalia (Figs. 6, 7 and 8); median lobe with ventral valve triangular, dorsal valve subovate; internal sac armature consisting of two long, slender, rodlike sclerites sharply angulate at attachment to sac, two sharply triangular, hollow sclerites with variably sclerotized bases, and one sinuate, serrate, rodlike sclerite; apex with U-shaped sclerite. Fig. 8 shows lateral aspect of inflated internal sac and relationships of various sclerites. Lateral lobes as in Fig. 7.

Body length.—6.9–8.0 mm; width.—4.0–4.4 mm.

Holotype male.—PANAMA: Barro Colorado Isl., 16-17-V-1964, W.D. and S.S. Duckworth. Allotype, same data except 1-9-V-1964; four male paratypes, same data except dates 1-17-V-1964; additional paratypes.—PANAMA: C.Z., Barro Colorado Isl., 1-VI-1970, 16-VI-1970, 3-VII-1970; 0.5 mi S Palo Seco, IV-1970; Balboa, 31-III-1970, all coll. by Hespenheide; 13-II-1980, 16-IV-1980,30-IV-1980, 7-14-IV-1980, 23-VII-1980, all by Wolda; VI-1940, IV-1941, at light, VII-1941, all by Zetek; 2-I-1941, 14-I-1941, 15-XII-1941, (no date), all by K. Cooper; 3-IV-1929, ex *Apeiba aspera* (= *A. membranacea*), S.W. Frost; 18-II-1971, Coco Solo Hosp., 26-XII-1971, Stockwell; 2-I-1940, 20-III-1940, Wood; I-1935, Bates; Barro Colorado Isl., 11/23-XI-1963, Bottimer #117H; 14/22-III-3-IV-1964, Bott. #121v; 21-III-1967, ex fruits *Apeiba membranacea.* NICARAGUA: Granada, Divia, 19/29-VI-1963, Bott. #114p. COSTA RICA: Surubres; Santa Rosa, Nat. Pk., Gste. Prov., 25-V-1978, Janzen. COLOMBIA: Valle, below Cali, V-86, C. Varela, ex *Apeiba aspera.* ECUADOR: Santo Domingo de los Colorados, 10-X-1980, Manley.

Holotype, allotype, and paratypes deposited in the National Museum of Natural History, Washington, DC. Paratypes deposited in The Canadian National Museum, Ottawa; the C. D. Johnson Collection, Flagstaff, Arizona; the Museum of Comparative Zoology, Cambridge, Massachusetts; the American Museum of Natural History, New York; the Museum National d'Histoire Naturelle, Paris, H. A. Hespenheide, University of California, Los Angeles; H. F. Howden, Carleton University, Ottawa, ON; and G. V. Manley, Three Rivers, MI.

Discussion.—This species closely resembles *Amblycerus cistelinus* (Gyllenhal) in dorsal and pygidial color pattern, but the mesoventral margin of the metafemur in *cistelinus* is angulate near the metatibial insertion contrasted with the straight margin in *whiteheadi,* and the male genitalia of the



Figs. 1–9. *Amblycerus whiteheadi,* new species. 1, dorsal habitus; 2, pronotum, dorsal outline; 3, scutellum; 4, pygidium; 5, metafemur and tibia; 6, male genitalia, median lobe; 7, same, lateral lobes; 8, same, everted internal sac (dv—dorsal valve, vv—ventral valve); 9, pupal case.

two species, although similar, are diagnostic (cf. fig. 16, Kingsolver 1970, with Figs. 5, 6, and 7, this paper). *Amblycerus cistelinus* infests fruits of *Guazuma ulmifolia* (Sterculiaceae). Freese (1983) observed Capuchin monkeys feeding on larvae in *Apeiba* fruits. His identification of *Amblycerus cistelinus* undoubtedly should be referred to *A. whiteheadi.*

Biology.—The fruits of *Apeiba membranaceae* are "depressed-globose, 8 to 10 cm. in diameter, coriaceous, pulpy within, densely covered with long, stout, hairy spines" (Standley 1923). The spines, however, are rubbery when green.

Lawrence J. Bottimer collected and reared specimens of this bruchid at Barro Colorado Island, Panama. Following is a transcription of his unpublished notes written 27-II-1964:

"Located a large tree of *Apeiba membranacea* (monkey comb) (Tiliaceae) with a large crop of mature pods. Some were eaten by animals perhaps for the bruchid larvae, but collected many that were not eaten. Eggs were deposited mainly on the short spines. Found at edge of fruit injuring nearly every part of the fruit.

"When the fruits are immature, the contents are watery, but in maturity, the contents dry and separate from the inside surface of the fruit forming a waferlike mass of seeds attached to both the stem end and the distal end of the fruit, but which eventually breaks loose and lies loose inside the fruit. The "wafer" is nearly circular and thinned or rounded at the edges. It is composed of 10 triangular sections of tightly packed brownish yellow, wedge-shaped seeds."

"The bruchid larvae feed within the wafer of seeds. Several larvae may feed in a wafer at one time reducing it to a brownish mass of fiber and frass. Pupal cells are constructed along the edge of the wafer, and consist of rather substantial layer of frass that has been cemented together. Escape from the cell is accomplished by the larva cutting a disk from the outer rim of the fruit. The larvae had the remarkable ability to crawl on their backs, but because of the curved shape of the body, progress was slow because they tended to fall over on their sides."

Pupal cells associated with Bottimer's specimens from Barro Colorado are constructed of seeds, frass, and fibrous material. The glandular source of the adhesive holding the cells together is not known.

Etymology.—This species is named for my late friend and colleague, Donald R. Whitehead (1938–1990) who collaborated with me for four years on Middle American bruchids.

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